UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,190	11/18/2003	Atsushi Koide	AK-431XX	4133

207 7590 04/04/2006

WEINGARTEN, SCHURGIN, GAGNEBIN & LEBOVICI LLP
TEN POST OFFICE SQUARE
BOSTON, MA 02109

EXAMINER	
AN, SANG WOOK	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/716,190	KOIDE ET AL.	
	Examiner	Art Unit	
	Sang W. An	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/17/2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/1/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 6, the examiner notes that adding carbon nanotube to a polypropylene resin would increase not decrease the viscosity of the resin (see "Incorporating Carbon Nanotubes Into Polypropylene Fibers" Pg 54 Line 4).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Friend et al. (US 2002/0132075) and evidenced by Friend et al (US 6464908). Regarding claim 1, Friend teaches a method of making a multi-layered polymeric structure on a composite product having a skin layer and a core layer (abstract), comprising steps of: (a) adding a carbon nanomaterial to either a first thermoplastic resin or a second

thermoplastic resin (Pg. 3 Par. 39); (b) injection molding both said resins into a mold to produce said composite product having the skin layer containing said first thermoplastic resin and the core layer containing said second thermoplastic resin (Pg.4 Par. 46), wherein said first thermoplastic resin is firstly injected into the mold, then said second thermoplastic resin is injected into said first thermoplastic resin in the mold (Pg.4 Par.46).

As to the viscosity modification, Friend et al (US 6464908) discusses the modification of the viscosity of the resin when carbon fibrils are mixed with the polymeric resin (col.3 line 44-46). Here, Friend suggests using thermoset resins such as polyester as the preferred resin material (col.2 line 48) and mixing less than or equal to 20 wt % of the carbon fibrils (col. 3 line 1) of which the fibrils are observed to modify the viscosity. Similarly, Friend et al (US 2002/0132075) teaches an example where a masterbatch composition containing 15 wt % carbon fibril loading and 85% polybutylene terephtalate (PBT), a polyester, is mixed together. As evidenced by Friend (US 6464908), we would inherently expect the viscosity of the masterbatch to increase upon the addition of carbon fibrils in Friend (US 2002/0132075).

Regarding Claim 2, Friend et al (US 2002/0132075) teaches using antistatic bilayered polymeric structure for packaging electronics where both the first and second layers have antistatic properties (Pg. 4 Par. 49-50). Therefore the examiner has determined that the first and the second resins, in this example, are the "same kind of resin," namely polymers with antistatic properties.

Regarding Claim 3, Friend et al (US 2002/0132075) teaches using different materials for the bilayered polymeric structure (Pg. 5 Par. 57, please note that the examiner has interpreted "with another" to mean two different kinds of resins).

Regarding claim 4, Friend et al (US 2002/0132075) teach adding the carbon nanomaterial to the first thermoplastic resin or the second thermoplastic includes kneading said carbon nanomaterial and thermoplastic resin to provide better dispersion efficiency (par 0044).

Regarding claim 5, Friend et al (US 2002/0132075) teach adding the carbon nanomaterial to the thermoplastic resins comprises adding the carbon nanomaterial in a range between about 1 and about 20 percent by mass (par 0039).

Regarding claim 9, Friend et al (US 2002/0132075) teach that the carbon nanomaterial is added to the second thermoplastic resin so that the viscosity of the second thermoplastic resin is made greater than the viscosity of the first thermoplastic resin and the skin layer of the first thermoplastic resin is pressed and stretched by the more viscous second thermoplastic layer to control its thickness (par 0039). Examiner notes that the first layer contains a lower concentration of carbon fibrils as compared to the second layer. Therefore the viscosity of the second layer will be greater than the first layer (see claim 1 rejection for further discussion on carbon fibrils and their relationship to viscosity).

Regarding claim 10, Friend et al (US 2002/0132075) teach that the carbon nanomaterial is added to the first thermoplastic resin so that the viscosity of the first thermoplastic resin is made less than the viscosity of the second thermoplastic resin

and the skin layer of the first thermoplastic resin is pressed and stretched by the more viscous second thermoplastic layer to control its thickness (par 0039). Examiner notes that the first layer contains a lower concentration of carbon fibrils as compared to the second layer. Therefore the viscosity of the second layer will be greater than the first layer (see claim 1 rejection for further discussion on carbon fibrils and their relationship to viscosity).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend et al (20020132075) in view of Albuquerque et al (6382763). Albuquerque et al teach that the carbon nanotube has a particle length and a viscosity variation that is controlled by controlling the particle length of the carbon nanotube and the increasing particle length will increase viscosity (col 4 lines 53-62). Therefore it would have been

obvious to one of ordinary skill in the art at the time of invention to use the teachings of Albuquerque et al in Friend et al's method of method making a multilayered polymeric structure in order to control the viscosity of the different layers.

Response to Argument

Applicants argue that neither of the Friend references teaches, mentions or suggests injecting the second thermoplastic resin into the first thermoplastic resin to control the thickness of the skin layer. Indeed, Patent Number 6,464,9Q8 merely discloses incorporating carbon fibrils into a matrix using reaction injection molding (RIM), sheet molding compounds (SMC) or bulk molding compounds (BMC) techniques. There is no mention of first and second thermoplastic resins or injecting the second thermoplastic resin into the first thermoplastic resin.

Applicant's arguments have been fully considered but they are not persuasive. In paragraph 0046 of Friend et al reference (20020132075), Friend teaches injection molding the first layer then injecting a second layer where the second layer causes a melt-bond to form between the first and second layers. This process suggests that as the second material is injected, the heat from the second layer causes some melting of the first layer and thereby fusing the boundary layers of the to layers to fuse together. This in effect, precisely describes the applicants' claim that the second layer is injected into the first thermoplastic resin. Although the Friend et al uses the word "onto" the process could easily be described by using the word "into" as the applicants have done.

Regarding Section 112, First Paragraph Rejection, Applicant's arguments have been fully considered and are persuasive. The 112, First Paragraph Rejection of claim 1 has been withdrawn.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang W. An whose telephone number is (571) 272-1997. The examiner can normally be reached on Mon-Fri 7AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached at 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sang Wook An
Patent Examiner
Art Unit 1732
March 22, 2006

MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER